

Serial No. 10/680,572

June 15, 2005

Reply to the Office Action dated February 18, 2005

Page 6 of 9

REMARKS/ARGUMENTS

Claims 1-14 are pending in this application.

Claims 1-6, 11, 12 and 14 were rejected under 35 U.S.C. § 102(b) as being anticipated by Takeshima (U.S. 6,653,762). Claims 1-6 and 12-14 were rejected under 35 U.S.C. § 102(e) as being anticipated by Takeshima et al. (U.S. 6,794,799). Claims 7-11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takeshima et al. '799 in view of Kaida (U.S. 6,040,652). Applicants respectfully traverse the prior art rejections of claims 1-14.

Claim 1 recites:

“A piezoelectric diaphragm comprising:

a multilayer ceramic body including a plurality of piezoelectric ceramic layers, principal-surface electrodes disposed on upper and lower principal surfaces of the multilayer ceramic body, and an internal electrode provided at an interface between adjacent piezoelectric ceramic layers; wherein

flexure vibration occurs in the piezoelectric diaphragm when an AC signal is applied between the internal electrode and the upper and lower principal-surface electrode;

the upper and lower principal-surface electrodes are electrically connected to each other via a first side surface electrode disposed on one side surface of the multilayer ceramic body;

the internal electrode is electrically connected to a second side surface electrode disposed on a side surface that is different from the side surface on which the first side-face electrode is provided;

the second side surface electrode is electrically connected to a lead electrode disposed on at least on the upper principal surface of the multilayer ceramic body;

the upper and lower principal surfaces of the multilayer ceramic body being substantially entirely covered with a resin layer;

a first cutout being formed in a side-edge portion, along the first side surface electrode, of the upper resin layer such that the upper principal-surface electrode is partially exposed in the first cutout;

a second cutout being formed in a side-edge portion, along the first side surface electrode, of the lower resin layer such that the lower principal-surface electrode is partially exposed in the second cutout; and

Serial No. 10/680,572

June 15, 2005

Reply to the Office Action dated February 18, 2005

Page 7 of 9

a third cutout being formed in a side-edge portion, along the second side surface electrode, of the upper resin layer such that the lead electrode is exposed in the third cutout, and

the first and second cutouts formed in the upper and lower resin layers, respectively, are at locations that do not oppose each other. (emphasis added)

With the unique combination and arrangement of method steps and features recited in Applicants' claim 1, including "a first cutout being formed in a side-edge portion, along the first side surface electrode, of the upper resin layer such that the upper principal-surface electrode is partially exposed in the first cutout," "a second cutout being formed in a side-edge portion, along the first side surface electrode, of the lower resin layer such that the lower principal-surface electrode is partially exposed in the second cutout" and "the first and second cutouts formed in the upper and lower resin layers, respectively, are at locations that do not oppose each other," Applicants have been able to provide a piezoelectric diaphragm having reliable electrical connections between a side surface electrode and upper and lower principal-surface electrodes, and having improved resistance against mechanical shocks (see, for example, the first full paragraph on page 5 of the originally filed specification).

The Examiner alleged that Fig. 8 of Takeshima '762 teaches all of the features recited in Applicants' claim 1. The Examiner acknowledged that "the specification is silent on the relative positions of [cutouts] #36b and #37b." However, the Examiner alleged that "from visual inspection of fig. 8 [of Takeshima '762,] it appears that they are not aligned i.e. the distance from the back edge of 37b appears to be longer than from the back edge to #36b." Applicants respectfully disagree.

As clearly seen in Fig. 9 of Takeshima '762, which is a cross-sectional view of the device shown in Fig. 8 of Takeshima '762 taken along line D-D, the cutouts 36b and 37b are clearly shown as being directly opposed to one another. Thus, contrary to the Examiner's allegations, Takeshima '762 certainly fails to teach or suggest the features of "a first cutout being formed in a side-edge portion, along the first side surface

Serial No. 10/680,572

June 15, 2005

Reply to the Office Action dated February 18, 2005

Page 8 of 9

electrode, of the upper resin layer such that the upper principal-surface electrode is partially exposed in the first cutout," "a second cutout being formed in a side-edge portion, along the first side surface electrode, of the lower resin layer such that the lower principal-surface electrode is partially exposed in the second cutout" and "the first and second cutouts formed in the upper and lower resin layers, respectively, are at locations that do not oppose each other" as recited in Applicants' claim 1.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1 under 35 U.S.C. § 102(b) as being anticipated by Takeshima '762.

Takeshima et al. '799 qualifies as prior art under 35 U.S.C. § 102(e), and Mr. Tetsuo Takeshima is an inventor in Takeshima et al. '799 and in the present application. Accordingly, Applicants enclose herewith a Declaration under 37 C.F.R. § 1.132, which indicates that Mr. Tetsuo Takeshima (1) is an inventor in the present application, (2) invented all of the subject matter disclosed in U.S. Patent No. 6,794,799 and relied on in a prior art rejection of the claims of the present application, and (3) invented the common subject matter disclosed in U.S. Patent No. 6,794,799 and the present application. Therefore, Applicants respectfully submit that Takeshima et al. '799 is disqualified as prior art in a rejection of the claims of the present application under 35 U.S.C. § 102(e).

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-6 and 12-14 under 35 U.S.C. § 102(e) as being anticipated by Takeshima et al. (U.S. 6,794,799), and the rejection of claims 7-11 under 35 U.S.C. § 103(a) as being unpatentable over Takeshima et al. '799 in view of Kaida (U.S. 6,040,652).

In view of the foregoing remarks, Applicants respectfully submit that claim 1 is allowable. Claims 2-14 depend upon claim 1, and are therefore allowable for at least the reasons that claim 1 is allowable.

Serial No. 10/680,572

June 15, 2005

Reply to the Office Action dated February 18, 2005

Page 9 of 9

In view of the foregoing amendments and remarks, Applicants respectfully submit that this application is in condition for allowance. Favorable consideration and prompt allowance are solicited.

To the extent necessary, Applicants petition the Commissioner for a One-month extension of time, extending to June 18, 2005, the period for response to the Office Action dated February 18, 2005.

The Commissioner is authorized to charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 50-1353.

Respectfully submitted,

Date: June 15, 2005


Attorneys for Applicants

Joseph R. Keating
Registration No. 37,368

Christopher A. Bennett
Registration No. 46,710

KEATING & BENNETT LLP
10400 Eaton Place, Suite 312
Fairfax, VA 22030
Telephone: (703) 385-5200
Facsimile: (703) 385-5080